Space Weather Forecast

Issued on Sunday 16 March 2025 at 00:48 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Moderate class flares likely. Chance G1/Minor Storms Days 1-2 (16-17 Mar).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Low, with only a few common class flares observed, despite there being thirteen regions currently on the visible disc. Peak flare was from the more complex region in the northwest disc, however this region has seen its negative spots decline, and has simplified to a more typical bipolar configuration. The most notable development was in the unipolar region in the south-centre, with the emergence of small spots on its southwestern edge, leading to the region complexifying into a being a small bipolar group. Small growth was also observed in the intermediate spots of the region in the southeast.

No Earth-directed coronal mass ejections (CMEs) have been observed in available imagery

Solar Wind / Geomagnetic Activity: Ongoing fast solar wind from a coronal hole was observed. Speed, as measured by ACE at L1, was elevated, between 500-570 km/s, but eased to be slightly elevated from 15/2000 UTC, at around 480km/s. Interplanetary Magnetic Field, was weak. with the north-south component also weak and variable. Geomagnetic activity was Active (Kp4) until 15/1200 UTC, then eased to be Quiet to Unsettled (Kp1-3).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background levels with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate activity is expected, with isolated Moderate class flares likely.

Solar Wind / Geomagnetic Activity: There are no Earth-directed CMEs. Ongoing fast solar winds may ease a little day 1 (16 Mar), before a further brief enhancement is likely later day 1 or day 2 (16-17 Mar). This is enhancement is low confidence, however. Solar winds then easing towards background day 3-4 (18-19 Mar). Mainly Quiet to Unsettled geomagnetic activity is likely at first, with a chance of isolated Active intervals, but also a chance for a spell of Active to G1 Minor Storms, most likely on day 2 (17 Mar). Conditions easing to be mainly Quiet by day 4 (19 Mar).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to persist at background with no solar radiation storms occurring.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 370 900 0100 Email: enquiries@metoffice.gov.uk

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Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	20	30	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 (M Class)	No	60	60	60	60
Very Active	R3-R5 (X Class)	No	10	10	10	10

Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	10	10	10
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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